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ABSTRACT

The Bilingual Pupil Services Program is a long-standing state-funded project in New York City. During the 1987-88 school year, it provided supportive bilingual instruction to 1,875 Haitian, Hispanic, and Chinese children of limited English proficiency enrolled in 78 classes at 30 participating schools in 4 boroughs. The program had a clearly articulated and rigorous selection system for placement sites and participating paraprofessionals. It provided inservice training to 78 bilingual paraprofessionals and helped them complete bachelor's degrees in education for licensing as bilingual teachers. The program met its objectives in English and native language reading, mathematics, staff development activities, parent training, and facilitation of coordination among district and school personnel. Recommendations for program improvement include providing release time for cooperating teachers to attend monthly workshops, development of additional reading and writing materials in Haitian Creole, and augmentation of the paraprofessionals' training in computer education.
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OREA Report

EVALUATION SECTION REPORT

BILINGUAL PUPIL SERVICES

(B.P.S.)

1987-88

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EVALUATION SECTION REPORT

BILINGUAL PUPIL SERVICES

(B.P.S.)

1987-88

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5/22/89

BILINGUAL PUPIL SERVICES (B.P.S.)*
1987-88

SUMMARY

- The Bilingual Pupil Services (B.P.S.) program was fully implemented. During the 1987-88 school year, the project recruited, trained, placed, and supervised 78 paraprofessionals to work with limited English proficient (LEP) Hispanic, Chinese, and Haitian students.

- The program met its objectives in English and native language reading, mathematics, staff development activities, parent training, and in facilitating coordination among district and school personnel (State Congruence project).

The Bilingual Pupil Services (B.P.S.) program is an Educational Consolidation and Improvement Act (E.C.I.A.) Chapter 1 project that the Office of Bilingual Education (O.B.E.) of the New York City Public Schools has administered for fifteen years. During the 1987-88 school year, B.P.S. provided supportive bilingual instruction to 1,875 Hispanic, Haitian, and Chinese children with limited English proficiency (LEP). These students were enrolled in 78 classes in 30 participating schools throughout Brooklyn, Manhattan, Queens, and the Bronx.

The B.P.S. program had a clearly articulated and rigorous selection system for both its placement sites and its participating paraprofessionals. B.P.S. provided in-service training to the 78 bilingual paraprofessionals in the program. B.P.S. also sought to help the paraprofessionals complete their bachelor's degrees in education so they could then become licensed bilingual teachers.

The program used the Comprehensive Test of Basic Skills (C.T.B.S.) to assess students' achievement in English language development, Spanish reading skills, and mathematics. It used a test developed by Community School District (C.S.D.) 2 for the assessment of reading skills in Chinese and an O.B.E.-developed test for Haitian Creole.

The conclusions, based on the findings of this evaluation, lead to the following recommendations:

- Attempt to secure release time for cooperating teachers to attend monthly district workshops.
- Develop additional reading and writing materials in Haitian Creole.

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*This summary is based on the final evaluation of the "Bilingual Pupil Services (B.P.S.) 1987-88" prepared by the OREA Bilingual Education Evaluation Unit.

- Augment the paraprofessionals' training in computer education.

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I. INTRODUCTION

OVERVIEW

Bilingual Pupil Services (B.P.S.) is an Education Consolidation and Improvement Act (E.C.I.A.) Chapter 1 program administered by the former Office of Bilingual Education (O.B.E.), now the Division of Multilingual and Multicultural Education (DOMME), of the New York City Board of Education. For the past 15 years, B.P.S. has had two complementary objectives: to provide supplementary services to students with limited English proficiency (LEP) by giving them instruction in English as a second language (E.S.L.), bilingual reading, and mathematics; and to provide in-service training to paraprofessionals who are enrolled in programs that lead to teacher certification. This year, B.P.S. trained 78 paraprofessionals who served 1,875 Hispanic, Chinese, and Haitian LEP students at 30 schools located in 17 community school districts in the Bronx, Brooklyn, Manhattan, and Queens.

The program added five paraprofessionals (three Chinese- and two Spanish-speaking) in Districts 2, 6, and 32 since the previous funding cycle. It also added ten Haitian Creole-speaking paraprofessionals and one field instructional specialist (FIS).

STAFF

B.P.S. staff for 1987-88 consisted of a project director, five FISs, an accountant, a bilingual stenographer/secretary, a bilingual office aide, and 78 paraprofessionals. The only staff

vacancy during the 1987-88 fiscal year was that of an assistant director. This position was filled, effective September 1988.

Project Director

The director, who was responsible for the overall administration, coordination, and supervision of the program, had been associated with the program since its inception and had served as its director for nine years. She is bilingual (Spanish and English), has a master's degree, and 19 years of teaching and supervisory experience.

The project director participated in the program's monthly in-service training sessions and frequently visited participating schools. She regularly held meetings with the FISs and closely supervised their work.

Field Instructional Specialists (FISs)

The five FISs--three who spoke Spanish/English, one Chinese/English, and one Haitian Creole/English--had master's degrees in bilingual education and had completed additional coursework in administration and supervision. The mean number of years of experience for this group was seven. One of their duties was to supervise the paraprofessionals, keeping a daily log of their activities for the director to check weekly. They also planned and coordinated training workshops, developed and distributed instructional materials, helped keep project records, and served as liaisons with district and school personnel.

To ensure that the program of in-service training workshops was both comprehensive and well-balanced, the director supervised the development of a session-by-session syllabus and assigned particular workshop topics to each FIS. The Haitian and Chinese FISs were involved with the development of tests and curricular materials. All FISs attended staff training workshops to update their knowledge.

Paraprofessionals

B.P.S. selected its paraprofessionals on the basis of an English test consisting of short answers and an essay; interviews in English and either Spanish, Chinese, or Haitian Creole; and a review of college transcripts. Candidates had to have completed at least 60 college credits.

B.P.S. paired each paraprofessional to a bilingual teacher who functioned as mentor. Paraprofessionals usually worked with small groups of students in a designated area of the room, teaching E.S.L., bilingual reading, bilingual mathematics, and writing skills. Paraprofessionals were expected to teach a maximum of 22 pupils per day, usually in groups of four to eight. They were also responsible for taking attendance and for pretesting and posttesting students, using the Comprehensive Test of Basic Skills (C.T.B.S., Spanish and English versions) and the teacher-made Chinese and Haitian Creole language arts tests.

In addition to their teaching duties, all paraprofessionals attended nine monthly workshops at program headquarters to

discuss issues related to bilingual education and to review procedures. Newcomers to the program also attended 13 weekly sessions on educational theory and practice at program headquarters and district-wide training workshops conducted by the FISs. Paraprofessionals received a stipend to attend the training sessions and release time to attend college courses. The major goal of these activities was to develop the paraprofessionals' bilingual teaching skills and to foster an understanding of bilingual education theory and practices.

Since the inception of the program fourteen years ago, over 1,100 paraprofessionals have received college degrees. The majority currently hold positions in New York City schools as teachers, curriculum specialists, assistant principals, or counselors. One former B.P.S. paraprofessional is a community school district superintendent.

PROGRAM SITES

During 1987-88, the B.P.S. project placed 78 paraprofessionals (55 Hispanic, 13 Chinese, and 10 Haitian) in 30 schools located in four boroughs and 17 community school districts.

To be eligible for participation in the B.P.S. project, a school had to be a Chapter 1 school with a bilingual program in effect for at least one year and have a high concentration of LEP pupils of Hispanic, Chinese, or Haitian background. It also had to establish that there would be no duplication of services to program-eligible pupils (those scoring below the twenty-first

percentile on the Language Assessment Battery and below grade norms in reading and mathematics), and be willing to give the paraprofessionals release time to attend college courses and B.P.S. in-service training.

B.P.S. chose those schools with the greatest need for its services to participate in the program.

II. PROGRAM ACTIVITIES

Since 1987-88 was the first full year that the Haitian Creole component was in operation, the major focus of this report is on its activities.

STAFF DEVELOPMENT ACTIVITIES

- Seventy-eight paraprofessionals will receive specialized training in bilingual education in such areas as: the teaching of reading and mathematics, grades one through six; selection, development, and evaluation of curricular materials; teaching E.S.L.; writing lesson plans; and classroom management. In addition, monthly district-wide workshops on demonstration lessons, parental involvement, the use of audiovisual equipment, and testing and evaluation will be held. The program's five Field Instructional Specialists will teach both the weekly classes for new paraprofessionals and the monthly district-wide workshops for all paraprofessionals. This objective will be measured by an "In-service Evaluation Form" to be completed semiannually by each paraprofessional.

- Six pedagogical staff members will participate in training sessions provided by the Instructional and Support Services Division of the O.B.E.'s Center for Staff Development. Topics will include: goals and objectives of projects; innovative trends, techniques, and methodologies for teaching E.S.L.; bilingual reading and mathematics instruction; grouping for instruction; bilingual curriculum and materials evaluation; research on evaluation and testing in bilingual education; methods of supervision and training; parental involvement; educational law; and bilingual education. This objective will be measured by an "In-service Evaluation Form" developed by B.P.S.

Training activities for the paraprofessionals in the B.P.S. program consisted of nine monthly workshops for all program participants, weekly in-service sessions for new entrants into the program, and four seminars for graduating paraprofessionals.

Monthly Workshops

All 78 paraprofessionals attended seminars led by B.P.S. staff. Workshop topics included: communication arts, Puerto Rican heritage month, Christmas group activities, Dominican heritage and culture, Chinese culture, bilingual special education, Haitian culture, and E.S.L. The workshops ran from 9:00 a.m. to 3:00 p.m. After a brief discussion on administrative matters, the leader devoted the morning to theory and the afternoon session to practical application of the major topic of the day.

The five FISs ran the monthly district workshops, which included guest speakers, e.g., Diana Boschen from the New York Daily News, who spoke on the use of the newspaper in communication arts; Carol Perchik, an E.S.L. coordinator in District 17; the Haitian singer Myriam Dorisme; Jean-Louise Wilel, who spoke about bilingual special education; Dr. Liang Yung-Han and Magdalene Chan, who gave a demonstration on acupuncture; and Ronald Hwang and Felicia Ng, who presented an introduction to Chinese culture. There were also presentations of folk dances from the Dominican Republic and Haiti, and a demonstration of origami and calligraphy. Participants also went on a field trip to the AT&T Quest Center and an IBM computer exhibit.

Participants received evaluation questionnaires at the end of each monthly workshop with ratings of "excellent," "good," "fair," or "poor" for each session. The questionnaire also

asked about the relevancy of the program materials, pertinency of content, the most and least significant aspects, the overall effectiveness, and suggestions for future project activities.

OREA staff members reviewed questionnaires from a sampling of the monthly workshops. Responses were overwhelmingly positive. The vast majority found all or nearly all of the activities to be very useful both in the information shared and in the potential for practical application in their classrooms.

An OREA consultant attended the workshop on Haitian culture, at which there were 80 participants. These included students from B.P.S. program schools, B.P.S. paraprofessionals, cooperating teachers, B.P.S. staff, and consultants. All the participants took part in the activities, which included singing and dancing, playing music, and asking and answering questions.

The Haitian paraprofessionals planned and implemented the cultural component of the workshop. One gave a presentation on Haitian folktales. There was a discussion of the basis of folk music in politics and community issues, followed by a demonstration of the typical musical instruments used in Haiti. Various arts and crafts--embroidery, baskets, and wooden carved items--were displayed, each with a typewritten explanation of its function and origin. A Haitian singer, Myriam Dorisme, gave a demonstration of the rhythm and content of Haitian song.

After lunch, there were four workshops each with approximately 20 participants, on the Haitian kite, flower

making, doll making, folklore, and Haitian cuisine. The Haitian cuisine group prepared foods for the others to taste.

In-Service Training

Paraprofessionals entering the program in the 1987-88 project year attended 13 weekly in-service training sessions provided by the director of B.P.S. and the five FISs to acquaint them with E.S.L., bilingual reading and mathematics, native-language instruction, and the use of computers in the classroom. Each session included a segment on materials development. Participants received an agenda for the sessions in addition to a complete syllabus including course objectives, a calendar of events, and the products to be developed in each of the sessions.

Thirty-three participants used an evaluation form to assess the overall effectiveness of the in-service training. As with the monthly workshops, answers indicated that the in-service training sessions for newcomers to the B.P.S. project were very well structured and sensitive to participants' individual and collective training needs.

A field consultant spoke with three paraprofessionals who participated in the in-service training. They indicated that the training gave them needed support and intensive exposure to areas that would carry over into the monthly district workshops.

Seminars for Graduating Paraprofessionals

B.P.S. provided four graduate in-service workshops for those paraprofessionals who were completing their baccalaureate degrees and graduating from the program. The foci of these seminars were on strategies to assist new teachers in writing effective resumes, on an overview of bilingual education, and on the use of the Comprehensive Instructional Management System (CIMS), a mathematics program used in many school districts.

B.P.S. unquestionably met its staff development objectives.

PARENT TRAINING

- Members of the Parent's Advisory Council (P.A.C.) and other program parents will receive an overview and training regarding Chapter I guidelines; objectives of B.P.S.; coordination activities; and the roles and responsibilities of program participants, staff, and P.A.C. as measured by participants' comments and suggestions as to the effectiveness of program and training.

B.P.S. staff presented a parental workshop entitled "Ways to Help Your Child." The agenda included an overview of B.P.S., a discussion about bilingual education, helping children succeed in school, information on the Regents Action Plan, testing issues, and a discussion period. The five FISs conducted the workshop. Workshop leaders distributed materials on test-taking skills, bilingual education, and E.S.L. programs.

B.P.S. accomplished its parent training objective.

STATE CONGRUENCE PROJECT

- Coordination among district superintendents, principals, teachers, and paraprofessionals will be facilitated and organized by B.P.S. staff as part of the State Congruence Project. This objective will be measured by participants' comments and suggestions as to the effectiveness of B.P.S. in the role.

B.P.S. received a New York State Education Department Congruence Project Award for a team project that facilitated the coordination among district superintendents, principals, teachers, and paraprofessionals. The major goal of this project was to improve services to LEP children. B.P.S. was instrumental in accomplishing this goal through its training activities and overall coordination efforts.

Principals and bilingual coordinators said that B.P.S. was efficiently run and well organized, that it provided paraprofessionals with excellent training and was crucial to the academic success of participating LEP students. Throughout the year, B.P.S. collaborated with resource and training units within the school districts, with the deputy director and director of O.B.E., and with other agencies that held conferences and training workshops on bilingual education. It met the State Congruence Project objective.

III. INSTRUCTIONAL ACTIVITIES

SPANISH READING

- In Spanish reading, participating students will achieve a mean posttest normal curve equivalent (N.C.E.) score that will surpass their pretest score at the .05 level of statistical significance as measured by the Comprehensive Test of Basic Skills - Spanish (C.T.B.S.-Spanish version).

The Comprehensive Test of Basic Skills (C.T.B.S.),* Spanish version, measured Spanish reading achievement. Raw scores were converted to Normal Curve Equivalent (N.C.E.) scores, which are normalized standard scores.** Statistical significance was assessed by using a t-test, and educational meaningfulness by calculating effect size (E.S.).***

The average gain was significant ($p < .05$) for all but the first grade. (See Table 1.) Second and sixth graders made the largest gains. Concomitant effect sizes ranged from very small to high (.08 to .80), with a small overall E.S. (.35),

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* Comprehensive Test of Basic Skills. Monterey, Ca: CTB/ McGraw-Hill, Inc., 1982

**N.C.E.s have the advantage of forming an equal interval scale so that scores and gains can be averaged. For the norming population, N.C.E.s have a mean of 50, a standard deviation of approximately 20, and a range from 1 to 99. Thus scores can be compared to the norming population.

*** The effect size, developed by Jacob Cohen, is a ratio of the mean gain to the standard deviation of the gain. This ratio provides an index of improvement in standard deviation units irrespective of the size of the sample. Effect size (E.S.) is interpreted to indicate educational meaningfulness, and an E.S. of .80 is thought to be highly meaningful, while one of .2 is considered to be only slightly so.

TABLE 1

Pretest/Posttest N.C.E. Differences on
the C.T.B.S. -- Spanish Version, by Grade

Grade	Test Level	N	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Difference Mean	Difference S.D.	t Value	Effect Size
1	B	384	47.1	22.1	48.9	18.4	1.8	22.9	1.50	.08
2	C	343	32.5	17.5	44.0	20.9	11.4	16.9	12.49*	.67
3	1	205	39.8	18.5	46.3	17.0	6.5	17.2	5.38*	.38
4	1	157	39.1	14.2	44.8	18.4	5.7	16.3	4.41*	.35
5	2	122	41.4	15.4	46.9	14.5	5.5	13.9	4.37*	.40
6	2	76	32.8	12.9	48.4	17.9	15.7	19.8	6.91*	.80
TOTAL		1,287	39.8	19.3	46.5	18.6	6.7	19.3	12.51*	.35

* $p < .05$

- Students at all grade levels except first showed significant posttest gains.

indicating little educational meaningfulness. Despite the lack of significance in first grade, B.P.S. met its Spanish reading objective.

CHINESE READING

- In Chinese reading, participating students will achieve a mean posttest N.C.E. score that will surpass their pretest score at the .05 level of statistical significance as measured by a C.S.D.2 developed test, which has been approved by the New York State Education Department.

A test developed by C.S.D.2 assessed the development of Chinese reading skills. On all grade levels, students showed a pretest/posttest gain, demonstrating that they had developed skills in Chinese reading. (See Table 2.) The overall effect size of .60 indicates moderate educational meaningfulness. B.P.S. met its objective in this area.

HAITIAN CREOLE READING

- In Haitian Creole reading, participating students will achieve a mean posttest N.C.E. score that will surpass their pretest score at the .05 level of statistical significance as measured by an Office of Bilingual Education developed test, patterned after the Comprehensive Test of Basic Skills (C.T.B.S.).

Students showed posttest gains at all grade levels. (See Table 3.) The overall E.S. of 1.01 indicated that the gains in Haitian Creole reading skills were highly meaningful. B.P.S. met its Haitian Creole reading objective.

TABLE 2

Pretest/Posttest Differences on Chinese Reading Test, by Grade

Grade	N	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Difference Mean	Difference S.D.	t Value	Effect Size
1	63	12.6	4.7	17.3	2.7	4.7	4.1	9.04*	1.15
2	67	17.0	3.2	18.0	2.9	1.0	2.3	3.63*	.43
3	56	22.2	5.1	25.5	4.3	3.3	3.9	6.38*	.85
4	11	16.0	6.9	20.9	4.9	4.9	4.3	3.79*	1.14
5	60	13.1	7.4	15.3	7.3	2.2	4.0	4.29*	.55
6	61	17.9	7.4	18.8	8.2	.9	4.8	1.48	.19
TOTAL	322"	16.5	6.7	19.0	6.3	2.5	4.2	10.72*	.60

* $p < .05$

"N does not equal total because of missing grade level for four students.

- Students at all grade levels except sixth showed significantly improved scores on the posttest.

TABLE 3

Pretest/Posttest Differences on Haitian Creole Reading Test, by Grade

Grade	N	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Difference Mean	Difference S.D.	t Value	Effect Size
1	80	56.6	17.6	69.8	10.9	13.2	14.5	8.15*	.91
2	80	52.3	21.6	68.8	21.5	16.6	14.2	10.43*	1.17
3	54	48.6	21.1	65.1	18.2	16.5	15.9	7.61*	1.04
4	12	59.8	17.9	66.8	21.6	7.0	12.9	1.87*	.54
5	7	52.6	12.6	67.6	17.6	15.0	12.6	3.16*	1.19
TOTAL	233	53.3	19.9	68.2	17.5	14.9	14.7	15.43*	1.01

* $p < .05$

- Students at all grade levels showed significant posttest gains

ENGLISH READING

- In English reading, participating students will achieve a mean posttest N.C.E. score that will surpass their pretest score at the .05 level of statistical significance as measured by the Comprehensive Test of Basic Skills- English (C.T.B.S. - English version).

Implementation

OREA field consultants focused on the activities of the newly formed Haitian-Creole component of B.P.S. in their observations. One second grade class they observed had two Haitian paraprofessionals. The first paraprofessional worked with four children in a reading group. She asked the students questions about vocabulary; they used the worksheets to work on contractions. The praprofessional conducted the lesson in English; the children spoke both English and Haitian Creole to each other. A classroom policy maintained separate linguistic codes in English and Haitian Creole, depending on the subject being taught.

Haitian Creole and English materials on the metric system and cultural themes decorated the room. An interview with the paraprofessional revealed that she did her own planning for one reading group and shared her lesson plans with the FIS weekly. She went on to discuss a problem common to Haitian children. They may not have had any formal schooling in Haiti and were in age- rather than skill-appropriate grades. This created confusion, particularly when students were classified as learning disabled when the actual problem was one of language proficiency. Conversely, the paraprofessional cited an example

of the success of the program: a child who came to the school two years ago with no English language skills was now at the top of the class in all subject areas.

A field consultant observed a first grade class of 30 Haitian students. The paraprofessional, working with ten students, conducted an introductory lesson in vocabulary, using flashcards. She placed the cards on the desks in random order and asked the students to locate the card representing a particular word and place it in the appropriate blank space in a sentence written on oaktag. The group then discussed the word and talked about other ways it could be used. Students' work decorated the room.

The paraprofessional explained that she worked with students in the areas of reading, mathematics, E.S.L., and native-language skills. Her group was primarily a homogenous English-dominant one. Three of the children learned Haitian Creole this year and most of the group spoke it, but they needed further literacy skills in the language. She said that she first presented material in English, then summarized it in Haitian Creole.

Outcome

In English language reading, Hispanic students made significant ($p < .05$) and quite sizeable N.C.E. gains on the C.T.B.S. (See Table 4.) The E.S. (.59) indicated that the gains were moderately meaningful from an educational point of view.

TABLE 4

Pretest/Posttest N.C.E. Differences on
the C.T.B.S. by Spanish-Language Students, by Grade

Grade	Test Level	N	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Difference Mean	Difference S.D.	t Value	Effect Size
1	B	354	39.1	19.7	43.2	16.2	4.1	18.1	4.22*	.23
2	C	320	24.7	15.7	39.2	16.8	14.5	14.8	17.56*	.98
3	1	179	29.0	18.4	34.7	18.0	5.7	15.6	4.94*	.37
4	1	135	21.6	13.7	29.5	11.1	7.9	14.2	6.49*	.56
5	2	107	29.8	14.9	35.4	14.9	5.6	12.2	4.73*	.46
6	2	73	24.8	17.4	39.8	15.4	15.0	14.8	8.68*	1.01
TOTAL		1,168	29.9	18.5	38.3	16.5	8.4	16.3	17.68*	.52

* $p < .05$

- Students at all grade levels made significant posttest gains.
- Gains were of moderate educational meaningfulness.

Largest gains were achieved in the second and sixth grades. B.P.S. met its English reading objective for Hispanic students.

On the English-language C.T.B.S., Chinese students had a significantly ($p < .05$) higher average N.C.E. score on the posttest than they did on the pretest. (See Table 5.) The higher pretest mean for third grade suggests the possibility of error in grading or recording scores. Gains for the fourth and fifth graders were not significant. The overall effect size was .39, considered to be of small educational meaningfulness. B.P.S. met its English reading objective for Chinese students.

Third, fourth, and fifth grade Haitian students showed significant ($p < .05$) gains in English reading skills. (See Table 6.) Effect sizes ranged from -.18 to 2.12. Overall, the gains were of very limited educational meaningfulness (E.S. = .16).

Overall, B.P.S. met its English reading objectives, although it did fall short of the criterion for a few grade levels in both Chinese and Haitian Creole.

MATHEMATICS SKILLS

- In mathematics, students will achieve a mean posttest N.C.E. score that will surpass their mean pretest score at the .05 level of statistical significance as measured by the Comprehensive Test of Basic Skills - Mathematics (C.T.B.S.- English version). Spanish, Chinese, and Haitian Creole will be used whenever necessary.

TABLE 5

Pretest/Posttest N.C.E. Differences on
the C.T.B.S. -- English Version, by Chinese-Language Students, by Grade

Grade	Test Level	N	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Difference Mean	Difference S.D.	t Value	Effect Size
1	B	14	24.5	23.6	57.0	7.5	32.5	24.1	5.05*	1.35
2	C	30	17.6	12.5	29.0	13.7	11.4	15.6	4.41*	.73
3	1	26	28.7	9.6	25.9	9.8	-2.8	15.5	-.91*	-.18
4	1	5	16.2	3.9	17.6	7.8	1.4	9.1	.35*	.15
5	2	26	21.1	8.4	21.8	8.9	.7	10.3	.32*	.07
6	2	24	12.5	4.2	17.3	9.6	4.8	10.5	2.21*	.46
TOTAL		125	20.4	12.7	27.3	15.3	6.9	17.5	4.4 *	.39

* $p < .05$

- Students in grades one, two, and six showed significant posttest gains.

TABLE 6

Pretest/Posttest N.C.E. Differences on the C.T.B.S. -- English Version, by Haitian Creole Language Students, by Grade

Grade	Test Level	N	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Difference Mean	Difference S.D.	t Value	Effect Size
1	B	76	63.4	24.0	60.2	15.9	-3.2	17.3	-1.62	-.18
2	C	67	33.7	19.1	36.8	17.2	3.1	17.9	1.41	.17
3	1	39	40.4	15.2	48.7	10.3	8.3	14.5	3.56*	.57
4	1	8	20.7	11.3	40.0	14.3	19.3	9.1	5.95*	2.12
5	2	6	23.2	17.9	39.8	6.9	16.6	17.5	2.33*	.95
TOTAL		196	45.7	24.9	48.5	18.2	2.8	17.7	2.18*	.16

* $p < .05$

- Students at grades three, four, and five and the total group made significant gains on the C.T.B.S.

The average N.C.E. gain for Spanish-speaking students in mathematics on the C.T.B.S. was 18.5. (See Table 7.) This was a sizeable and significant ($p < .05$) gain. Students at grade levels one through six showed significant improvement. Students in second grade showed the greatest gains. The overall E.S. of .91 indicated that the average gain was educationally highly meaningful.

The average N.C.E. gain for Chinese-speaking students in mathematics was 10.3. (See Table 8.) Fourth grade students showed a decreased posttest score and pretest/posttest differences in grades three and five, although in the right direction, were not significant. Gains were greatest in first grade. Overall, the students did show a significant ($p < .05$) pretest/posttest gain. The overall E.S. was small (.49).

Haitian students evidenced a significant ($p < .05$) mean N.C.E. gain of 14.7. Gains for these students were significant at all grade levels except fifth grade. (See Table 9.) Effect size was high (.88), indicating that gains were of great educational meaningfulness.

Although Chinese- and Haitian Creole-speaking students at some grade levels did not make significant gains in mathematics, overall all three groups did make significant gains. B.P.S. therefore achieved its objective in mathematics.

TABLE 7

Pretest/Posttest N.C.E. Differences on
the C.T.B.S. in Mathematics by Spanish Language Students, by Grade

Grade	Test Level	N	Pretest		Posttest		Difference		t	Effect
			Mean	S.D.	Mean	S.D.	Mean	S.D.	Value	Size
1	B	382	35.2	17.7	54.5	19.0	19.3	21.2	17.76*	.91
2	C	324	29.2	18.7	55.0	20.3	25.8	20.3	22.90*	1.27
3	1	205	30.2	21.3	43.1	18.3	12.9	18.2	10.14*	.71
4	1	156	28.7	14.1	41.3	14.6	12.5	15.1	10.37*	.83
5	2	122	40.1	16.1	50.9	15.1	10.8	14.3	8.35*	.76
6	2	77	29.1	16.5	52.2	23.7	23.1	25.4	7.95*	.91
TOTAL		1,266	32.2	18.4	50.7	19.5	18.5	20.3	32.53*	.91

* $p < .05$

- Students at all grade levels showed significant gains.
- Overall gains were highly educationally meaningful.

TABLE 8

Pretest/Posttest N.C.E. Differences on
the C.T.B.S. in Mathematics by Chinese Language Students, by Grade

Grade	Test Level	N	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Difference Mean	Difference S.D.	t Value	Effect Size
1	B	63	32.6	32.7	65.5	18.4	32.9	31.9	8.17*	1.03
2	C	67	47.5	17.7	58.6	5.8	11.1	16.0	5.68*	.69
3	1	56	49.0	20.7	51.8	15.4	2.8	15.6	1.34	.18
4	1	11	58.5	15.9	49.5	17.0	9.0	8.1	-3.72	-1.11
5	2	63	52.9	20.9	54.0	19.7	1.1	11.8	.74	.09
6	2	60	51.3	13.8	57.3	15.0	6.0	9.6	4.86*	.63
TOTAL		322	46.9	23.0	57.2	17.6	10.3	21.9	8.44*	.47

* $p < .05$

- Students in grade one, two, and six, as well as the total group, showed significant gains.

TABLE 9

Pretest/Posttest N.C.E. Differences on
the C.T.B.S. in Mathematics by Haitian Creole Language Students, by Grade

Grade	Test Level	N	Pretest Mean	Pretest S.D.	Posttest Mean	Posttest S.D.	Difference Mean	Difference S.D.	t Value	Effect Size
1	B	73	44.0	21.2	63.5	13.9	19.5	20.2	8.26*	.97
2	C	72	31.7	17.7	44.5	19.9	12.8	13.6	8.02*	.94
3	1	50	27.4	19.3	39.8	13.7	12.4	14.9	5.86*	.83
4	1	9	13.6	14.7	26.0	5.5	12.4	11.2	3.32*	1.11
5	2	6	21.8	21.9	22.5	11.1	.7	13.9	.12	.05
TOTAL		210	33.9	20.9	48.6	19.7	14.7	16.8	12.69*	.88

* $p < .05$

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- Students at all grade levels but fifth made significant gains in mathematics.

IV. CONCLUSIONS AND RECOMMENDATIONS

The 1987-88 evaluation of the Bilingual Pupil Services program indicated a high level of success in accomplishing the program's objectives. It met its objectives in reading in Spanish, Chinese, Haitian Creole, and English; and in mathematics, staff development activities, parent training, and facilitating coordination among district and school personnel (State Congruence Project). B.P.S. was highly structured and well organized and was staffed by experienced, sensitive, and enthusiastic educators.

An outstanding feature of the B.P.S. program was its two-tiered training program for new and continuing paraprofessionals. B.P.S. maintained direct, ongoing communication with the school districts.

The conclusions, based upon the findings of this evaluation, lead to the following recommendations:

- Attempt to secure release time for cooperating teachers so that they can attend monthly district workshops.
- Develop additional reading and writing materials in Haitian Creole.
- Augment the paraprofessionals' training in computer education.